IN THE CLAIMS:

Please amend the claims as follows (the changes in these claims are shown with ~~strikethrough~~ for deleted matter and underlines for added matter). A complete listing of the claims are listed below with proper claim identifiers.

1. (currently amended) A method for supplying electrical power to a first load using first and second power supplies each coupled with said first load, said first load characterized by an electrical power requirement, said method comprising:

(a) supplying electrical power to meet said electrical power requirement such that said first power supply supplies a portion of said electrical power not supplied by said second power supply;

(b) detecting failure of said second power supply;

(c) adjusting said first power supply to supply said electrical power requirement upon said detection; and

(d) preventing said first power supply from supplying more than said portion of said electrical power not supplied by said second power supply ~~where~~ when said second power supply has not failed.

2. (original) The method of claim 1, wherein said preventing further comprises preventing said first and second power supplies from exceeding said electrical power requirement.

3. (currently amended) The method of claim 1, further comprising:

(e) deactivating said first and second power supplies upon detection of failure of said first load.

4. (currently amended) The method of claim 1, further comprising:

(e) applying input power to said first and second power supplies;

(f) at least one of adding and removing one of said first and second power supplies;

(g) monitoring for a failure during (e) and (f); and

(~~g~~h) deactivating said input power to said first and second power supplies in response to detection of said failure.

5. (currently amended) The method of claim 1, wherein said first load comprises a circuit board coupled with a first backplane, said method further comprising:

(e) coupling said first and second power supplies with a second backplane, said first backplane being coupled with said second backplane.

6. (currently amended) A system for supplying electrical power to a first load characterized by an electrical power requirement, said system comprising:

first and second power supplies coupled with said first load and operative to supply electrical power to meet said electrical power requirement such that said first power supply supplies a portion of said electrical power not supplied by said second power supply;

a power supply controller coupled with said first and second power supplies ~~and said load monitor~~ and operative to detect failure of said second power supply, said power supply controller being further operative to adjust said first power supply to supply said electrical power requirement upon failure of said second power supply and prevent said first power supply from supplying more than said portion of said electrical power not supplied by said second power supply ~~where~~ when said second power supply has not failed.

7. (original) The system of claim 6, wherein said power supply controller is further operative to prevent said first and second power supplies from exceeding said electrical power requirement.

8. (currently amended) The system of claim 6, wherein said power supply controller ~~load monitor~~ is further operative to detect failure of said first load, said power supply controller operative to deactivate said first and second power supplies upon detection of said failure of said first load.

9. (currently amended) The system of claim 6, further comprising:

an input power supply operative to supply electrical power to said first and

second power supplies; and

wherein said power controller is further operative to deactivate said input power during a failure occurring during one of system power on, inserting one of said first and second power supplies and removing one of said first and second power supplies.

10. (currently amended) The system of claim 6, wherein said first load comprises a circuit board coupled with a first backplane, said system further comprising:

a second backplane to which said first and second power supplies are coupled, wherein electrical power flows to said circuit board through said first and second backplanes.

11. (currently amended) An apparatus for supplying power to a first load using first and second power supply means each coupled with said first load, said first load characterized by an electrical power requirement, said ~~method~~ apparatus comprising:

(a) means for supplying electrical power to meet said electrical power requirement such that said first power supply supplies a portion of said electrical power not supplied by said second power supply;

(b) means for detecting failure of said second power supply;

(c) means for adjusting said first power supply to supply said electrical power requirement upon said detection; and

(d) means for preventing said first power supply from supplying more than said portion of said electrical power not supplied by said second power supply ~~where~~ when said second power supply has not failed.

Please add new Claims 12-20 as follows:

12. (New) The method of Claim 1, further comprising:

(e) providing third and fourth power supplies each coupled with a second load; and

(f) isolating a fault in at least one of said third and fourth power supplies from

said first and second power supplies such that said fault does not affect operation of said first and second power supplies.

13. (New) The method of Claim 1, wherein said first and second power supplies are coupled with a first ground plane, said method further comprising:

(e) providing third and fourth power supplies each coupled with a second load, and wherein said third and fourth power supplies are coupled with a second ground plane; and

(f) isolating said first ground plane from said second ground plane.

14. (New) The method of Claim 1, further comprising:

(e) providing a first power distribution bus, said first power distribution bus operative to couple said first and second power supplies to said first load;

(f) providing third and fourth power supplies each coupled with a second load by a second power distribution bus; and

(g) isolating said first power distribution bus from said second power distribution bus.

15. (New) The apparatus of Claim 11, wherein said apparatus further supplies power to a second load using third and fourth power supply means each coupled with said second load, said apparatus further comprising:

(e) means for isolating a fault in at least one of said third and fourth power supply means such that said fault does not affect operation of said first and second power supply means.

16. (New) The apparatus of Claim 11, wherein said first and second power supply means are coupled with a first ground plane, and wherein said apparatus further supplies power to a second load using third and fourth power supply means each coupled with said second load, said third and fourth power supply means being coupled with a second ground plane, said apparatus further comprising:

(e) means for isolating said first ground plane from said second ground plane.

17. (New) The apparatus of Claim 11, wherein said apparatus further supplies power to a second load using third and fourth power supply means each coupled with said second load, said apparatus further comprising:

(e) a first power distribution means for distributing power to said first load from said first and second power supply means;

(f) a second power distribution means for distributing power to said second load from said third and fourth power supply means; and

(g) means for isolating said first power distribution means from said second power distribution means.

18. (New) The system of claim 6, further comprising:

third and fourth power supplies coupled with a second load; and

wherein said first and second power supplies are isolated from said third and fourth power supplies such that a fault in at least one of said third and fourth power supplies does not affect operation of said first and second power supplies.

19. (New) The system of claim 6, wherein said first and second power supplies are coupled with a first ground plane, said system further comprising:

third and fourth power supplies coupled with a second load, and wherein said third and fourth power supplies are coupled with a second ground plane; and

wherein said first ground plane is isolated from said second ground plane.

20. (New) The system of claim 6, wherein said first and second power supplies are coupled with a first power distribution bus, wherein said first power distribution bus is operative to distribute power from said first and second power supplies to said first load, said system further comprising:

third and fourth power supplies coupled with a second power distribution bus, wherein said second power distribution bus is operative to distribute power from said third and fourth power supplies to said second load; and

wherein said first power distribution bus is isolated from said second power distribution bus.

RESPONSE

This is a response to the Office Action dated July 15, 2003. Claims 1-11 are pending in the application. In the Office Action, the Examiner objected to the disclosure and the drawings because of informalities. Further, claims 6-11 were rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which is regarded as the invention. Claims 1-4, 6-9, and 11 were rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Pat. No. 6,158,553 ("Oshima"). Claims 5 and 10 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Oshima in view of U.S. Pat. No. 4,729,086 ("Lethellier").

The rejections from the Office Action dated July 15, 2003 are discussed below in connection with the various claims. No new matter has been added. Reconsideration of the application is respectfully requested in light of the following remarks.

I. OBJECTIONS

The Examiner objected to the disclosure of the present application due to informalities with the missing serial number and issued patent number of the copending application. Applicants have corrected the missing serial number and will correct the missing patent number once the cited patent has issued.

The Examiner also objected to the drawings of the present application due to informalities, alleging that 41 sheets of drawings seemed to be excessive. Applicants submit that in order to meet the best mode and enablement disclosure requirements under 35 U.S.C. § 112, first paragraph, all 41 sheets must be included in the patent application. Further, a significant portion of the 41 sheets are actually schematic diagrams of Applicants' best mode of practicing the claimed invention, split up into multiple sections to meet the patent drawing requirements. Applicants further note that, because schematic diagrams, which tend to be on paper that is larger than A4, can no longer be submitted on microfilm, the only way to include such diagrams is to include them as drawing sheets, appropriately sectioned so as to meet the patent drawing requirements.

Accordingly, Applicants request that the Examiner withdraw these objections.

II. REJECTIONS UNDER 35 U.S.C. § 112, second paragraph

Claims 6-11 were rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In particular, the Examiner found that the phrase "said load monitor" in claim 6 lacks any antecedent basis. With regards to claim 11, the Examiner found that in line 1 of the preamble, an "apparatus" was set forth, while in lines 3-12 a "method" was set forth.

With this amendment, claims 6 and 8-11 have been amended for clarity and not reasons related to patentability. Accordingly, Applicants respectfully request that the Examiner withdraw this rejection of Claims 6-11.

Further, with this response, Claims 1, 3-6, and 8-11 have also been amended to correct typographical errors for clarity and not for reasons related to patentability.

III. REJECTIONS UNDER 35 U.S.C. § 102(b)

Independent claims 1 and 6 were rejected pursuant to 35 U.S.C. § 102(b) as being anticipated by Oshima. Applicants presume that the Examiner also meant to reject claim 11 pursuant to 35 U.S.C. § 102(b) as being anticipated by Oshima.

Independent claim 1, as amended, relates to "a method for supplying electrical power to a first load using first and second power supplies each coupled with said first load, said first load characterized by an electrical power requirement." The method comprises "supplying electrical power to meet said electrical power requirement such that said first power supply supplies a portion of said electrical power not supplied by said second power supply;" "detecting failure of said second power supply;" "adjusting said first power supply to supply said electrical power requirement upon said detection;" and "preventing said first power supply from supplying more than said portion of said electrical power not supplied by said second power supply when said second power supply has not failed."

Independent claim 6, as amended, relates to "a system for supplying electrical power to a first load characterized by an electrical power requirement." The system comprises "first and second power supplies coupled with said first load and operative to supply electrical power to meet said electrical power requirement such that said first power supply supplies a

portion of said electrical power not supplied by said second power supply" and "a power supply controller coupled with said first and second power supplies and operative to detect failure of said second power supply." The power supply controller is "further operative to adjust said first power supply to supply said electrical power requirement upon failure of said second power supply and prevent said first power supply from supplying more than said portion of said electrical power not supplied by said second power supply when said second power supply has not failed."

Independent claim 11, as amended, relates to "an apparatus for supplying power to a first load using first and second power supply means each coupled with said first load, said first load characterized by an electrical power requirement." The apparatus comprises "means for supplying electrical power to meet said electrical power requirement such that said first power supply supplies a portion of said electrical power not supplied by said second power supply;" "means for detecting failure of said second power supply;" "means for adjusting said first power supply to supply said electrical power requirement upon said detection;" and "means for preventing said first power supply from supplying more than said portion of said electrical power not supplied by said second power supply when said second power supply has not failed."

Oshima discloses "[a] multiple-wound, three-phase, variable speed motor having N independent winding sets driven by N inverters, each responding to 1/N of the torque and excitation current commands, with the torque current limited as a function of N times the limiting current each inverter may tolerate, when all inverters are functioning. When M inverters fail, they are disconnected from the motor, the torque current is limited as function of N-M times the limiting current each inverter may tolerate. The remaining N-M inverters may each respond to 1/(N-M) of the torque and excitation commands. The excitation current may be maximized as (N-M) times the limiting current divided by the square root of two. The speed command may be predetermined by the integration over an acceleration interval, of the maximum acceleration achievable with torque available from those of the inverters which have not failed, in view of the inverters' current limits." *See* Oshima, Abstract.

Oshima fails to disclose "preventing said first power supply from supplying more than said portion of said electrical power not supplied by said second power supply when

said second power supply has not failed" as claimed in claim 1. Further, Oshima fails to disclose a power supply controller that is operative to "...prevent said first power supply from supplying more than said portion of said electrical power not supplied by said second power supply when said second power supply has not failed" as claimed in claim 6. In addition, Oshima fails to disclose a "means for preventing said first power supply from supplying more than said portion of said electrical power not supplied by said second power supply when said second power supply has not failed" as claimed in claim 11.

Instead, Oshima teaches how to improve the curtailed operation of a multiple-wound induction motor after failure of one or more inverters. *See* Oshima, Col. 1, lines 6-10. The system disclosed by Oshima works by increasing the excitation current of the remaining functioning inverters only after the failure of an inverter, so that the required current is supplied with fewer inverters. *See* Oshima, Col. 2, lines 7-14. The failure of an inverter is detected either through a failure control circuit or through a feedback loop. *See* Oshima, Col. 4, line 5 and Col. 2, lines 22-24. Oshima does not teach the prevention of a ramp-up of power of one power supply when all of the power supplies are working properly, as claimed by Applicants' claims. Such a teaching is unnecessary because through proper operation of the multiple-wound induction motor in Oshima, the excitation current to each inverter is limited to a proportional fraction of the maximum current each inverter may supply. *See* Oshima, Col. 2, lines 7-31. Further, Oshima does not teach the prevention of a ramp-up of power during the non-failure of a power supply because the danger of a catastrophic failure caused by an overload due to the accidental powering on of a redundant power supply does not exist for the application in Oshima, as it does in Applicants' invention. If the excitation current to the inverters in Oshima is increased from a proportional fraction of the maximum current each inverter may supply to the maximum current each inverter may supply, the only consequence is that the maximum torque and acceleration of the motor is increased. *See* Oshima, Col. 3, lines 51-64, Col. 6 lines 35-52.

Accordingly, Applicants respectfully request that the Examiner withdraw this rejection of these claims.

Dependent Claims 2-4, and 7-9 were also rejected as being anticipated by Oshima. The dependent claims should be allowed for the reasons set out above for the independent

claims. Applicants therefore request that the Examiner withdraw this rejection of these claims.

In addition, additional limitations of these dependent claims also distinguish over the cited references. For example, Oshima does not disclose: "deactivating said first and second power supplies upon detection of failure of said first load" as claimed in amended claim 3. Oshima also does not disclose: "said power controller to deactivate said first and second power supplies upon detection of said failure of said load" as claimed in amended claim 8. Oshima fails to teach the deactivation of the power supplies upon detection of a load failure. Although Oshima teaches that failed inverters are disconnected from the motor, there is no teaching that functioning inverters are to be disconnected from the motor when the motor fails. *See* Oshima Col. 4, lines 16-19.

IV. REJECTIONS UNDER 35 U.S.C. § 103(a)

Dependent claims 5 and 10 were rejected pursuant to 35 U.S.C. § 103(a) as being unpatentable over Oshima in view of Lethellier. Claims 5 and 10 should be allowed for the reasons discussed above for claims 1 and 6, the claims from which they depend. Further, Applicants submit that claims 5 and 10 are not obvious in view of the combination of Oshima and Lethellier as these references, alone or in combination, fail to disclose all of the elements of Applicants' claims.

Oshima is discussed in detail above. Lethellier discloses a "power supply system [that] includes a plurality of dedicated power supplies, each of which has a separate output terminal for furnishing output current to just one respective load. Each dedicated power supply has a switch for turning the supply on and off independent of the remaining dedicated supplies. A single redundant power supply is also included which turns on when every dedicated supply is on. And, a control circuit is included which shares output current from the redundant supply, when it is on, with the loads of only a subset of the dedicated supplies, such that the total shared output current from the redundant supply and the respective output current from each dedicated supply in the subset are all substantially equal. This subset consists of any dedicated supply which fails, and those dedicated supplies whose output

current to their load when the redundant supply is off exceeds the equalized current." *See* Lethellier, Abstract.

The cited combination of Oshima and Lethellier does not disclose all of the claimed limitations in claims 6 and 10. Both Oshima and Lethellier fail to disclose "coupling said first and second power supplies with a second backplane, said first backplane being coupled with said second backplane" as claimed in claim 5. Both Oshima and Lethellier also fail to disclose "a circuit board coupled with a first backplane, said system further comprising: a second backplane to which said first and second power supplies are coupled, wherein electrical power flows to said circuit board through said first and second backplanes" as claimed in claim 10. Oshima, as discussed above, makes no reference at all to backplanes or circuit boards. Oshima deals with an entirely different technology – pulse width modulated inverters that drive a multiple-wound induction motor. *See* Oshima, Col. 1, lines 6-9.

While Lethellier discloses the use of multiple backplanes and various power supply configurations for powering those backplanes, Lethellier does not disclose coupling a load to a first backplane, which in turn is coupled to a second backplane that is coupled to first and second power supplies. *See* Lethellier, Col. 1, lines 36-67. Lethellier teaches that instead of connecting the power buses of individual backplanes together, a separate set of power supplies can be provided to each backplane. *See* Lethellier, Col. 1, lines 51-55. Lethellier further teaches away from Applicants' invention by stating that in order to provide redundancy, "a separate redundant supply would also have to be provided for each backplane; and that would substantially increase the cost of the system." *See* Lethellier, Col. 1, lines 50-57. Lethellier then teaches a power supply system that provides for a single redundant power supply to work in parallel with the power supplies powering each backplane. *See* Lethellier, Col. 2, lines 6-27. While Lethellier discloses a load coupled to a first backplane, Lethellier fails to disclose the claimed configuration of first and second power supplies coupled to a second backplane, which is in turn coupled to the first backplane.

Further, Applicants submit that there would be no motivation to combine the teachings of Oshima and Lethellier. Oshima teaches an improvement in the curtailed operation of a multiple-wound, three-phase, induction motor upon the failure of one or more

inverters as applied to analog elevator motor drive systems. *See* Oshima, Col. 1, lines 6-10. Lethellier teaches a digital power supply system which shares current from a single redundant supply and furnishes DC current at a certain voltage to segmented electrical loads. *See* Lethellier, Col. 1, lines 1-9. One of ordinary skill in the art would not look to modify the technology of Oshima with that disclosed in Lethellier. The power requirements of the applications in the two technologies differ. Oshima uses three-phase, alternating current inverters to drive an induction motor. *See* Oshima, Col. 1, lines 50-60. Lethellier uses a single redundant power supply to work in parallel with the digital, direct current power supplies powering each backplane. *See* Lethellier, Col. 2, lines 6-27. As stated above, the consequence for a failed inverter in Oshima is that the maximum torque and acceleration of the motor is simply reduced. *See* Oshima, Col. 3, lines 51-64. Provided at least one inverter is still running, the system in Oshima can still provide some output torque to the motor. *See* Oshima, Col. 3, lines 60-64. The system in Oshima is designed to maximize output torque to the motor in the event of a failed inverter. *See* Oshima, Col. 2, lines 2-6. However, a failed power supply in the non-redundant systems taught by Lethellier potentially results in a system failure. *See* Lethellier, Col. 1, lines 29-32. To prevent this, the system in Lethellier makes use of a single redundant parallel power supply. *See* Lethellier, Col. 2, lines 6-18. One of ordinary skill in the art would not combine the Oshima system that teaches the maximization of output power with the system in Lethellier that teaches the use of redundant power supplies to provide a steady load current.

For at least these reasons, claims 5 and 10 are not obvious in view of Oshima and Lethellier, alone or in combination. Accordingly, Applicant requests that the Examiner withdraw this rejection of claims 5 and 10.

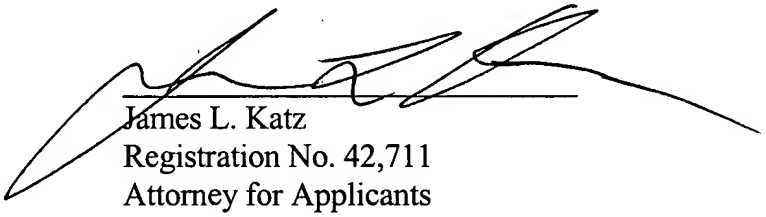
V. NEW CLAIMS

With this response, new claims 12-20 have been added. Support for these claims may be found in the specification. No new matter has been added. New claims 12-20 should be allowed over the cited references for the same reasons as discussed above. Accordingly, Applicants request that the Examiner allow new claims 12-20.

CONCLUSION

Each of the rejections in the Office Action dated July 15, 2003 has been addressed and no new matter has been added. Applicants submit that all of the pending claims are in condition for allowance and notice to this effect is respectfully requested. The Examiner is invited to call the undersigned if it would expedite the prosecution of this application.

Respectfully submitted,



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